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Understanding Spaces of Abandonment Through Virtual Frameworks in Landscape Architecture

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UNDERSTANDING SPACES OF ABANDONMENT THROUGH VIRTUAL FRAMEWORKS IN LANDSCAPE ARCHITECTURE

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01_Abstract [339 words]

In recent years, design professionals have implemented many contemporary landscape architecture projects across the United States. With a primary goal of returning nature to urban environments, contemporary landscape architects and other transdisciplinary partners work diligently to sculpt physical spaces that reflect the human-living experience. However, a leap into the world of video game design could allow landscape architects and urban planners to more freely create virtual social environments to address rising issues of abandonment in today's urban and rural spaces. Video game mechanics and methodologies can be used extensively in the disciplines of design that value participatory processes, like landscape architecture and urban planning. To better understand how users engage with physical and virtual space, landscape architects, urban planners, and video game designers must consider transdisciplinary approaches to illuminate landscape and architectural abandonment issues. Designers must integrate virtual platforms of engagement into the physical realm — as well as the socio-digital spaces we spend much of our time in — to more deeply understand how digital world-building can affect conditions of social and spatial marginality in the 'real world.' Suppose the underutilized space that fills our communities has the potential to become an alternate version of a "public" through virtual means. How, then, might design professionals introduce new and exciting platforms for public space to exist virtually?

To better understand the complex history of virtual environment building in landscape architecture, a literature review of information pertaining to post-industrial landscapes, video game design, and opportunities for educational intervention was conducted. Additionally, to further stress the importance of transdisciplinary practice, an exploration of the methodologies and frameworks that support video game design was conducted. Upon exploring various methodological frameworks, a more thorough understanding of how virtual environments can be created in spaces of abandonment was developed. Finally, a comparative analysis between three popular video games — including *The Witness*, *Block'hood*, and *Animal Crossing: New Horizons* — was conducted to explore how virtual landscape space might relate to physical landscape space and how the two might work together.

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key words: landscape architecture, post-industrial landscapes, video game design, virtual reality, social activism

02_Dedication [162 words]

This undergraduate Honors thesis could not have been completed without the guidance and support of Assistant Professor of Landscape Architecture Salvador Lindquist, who has served as my faculty mentor since May of 2020. He has given me nothing but encouraging and constructive feedback throughout this process. Similarly, I'd like to thank my significant other Carter Murry and best friend Emily Salisbury, for keeping me sane amidst the stress of my final undergraduate semesters.

I would also like to thank Catherine de Almeida, a tireless advocate in the field of landscape architecture, for introducing me to academic research through UCARE as a first-year student. Similarly, a thank you is in order for Yujia Wang and Sarah Karle, for helping to continue my love for research in various landscape architecture studio projects and UCARE opportunities. Finally, I would like to thank the University of Nebraska-Lincoln's Honors Program, College of Architecture, the New Student Enrollment program, and my friends and family for challenging me to become a better leader, student and community advocate throughout my college experience.

03_Table of Contents + Figures

Table of Contents

Figures

04_Introduction

Figure 01: *Exterior view of the Packard Plant in Detroit, MI*

Figure 02: *Interior view of the Packard Plant in Detroit, MI*

Although many urban and rural spaces in the United States have been affected by widespread abandonment and declining populations in recent years, perhaps Detroit has been affected most of all. Take, for example, Detroit's Packard Automotive Plant. For many years, it has existed as a symbol of the city's decay. Although it was once a very active site, the Packard Plant has not been successfully developed upon or used since the late 1990s, which is depicted in Figures 01[1] and Figure 02.[2] Now, the Packard Plant's deteriorating infrastructure remains quietly in a state of disrepair as Detroit struggles to re-integrate it into the city's social fabric.[3] However, Detroit is not the only city dealing with this issue. Several other cities in the Rust Belt and Great Plains seem to be shrinking, as well.

[1] *The Packard Plant Today (exterior view)*, February 26, 2018, Digital image, Packard Plant Project, Accessed June 4, 2020, http://packardplantproject.com/history/index.html.
[2] *The Packard Plant Today (interior view)*, February 26, 2018, Digital image, Packard Plant Project, Accessed June 4, 2020, http://packardplantproject.com/history/index.html.
[3] Breana Nobel, "Grand Plan to Redevelop Packard Plant Is Scrapped; Eyesore Goes Back on Market," The Detroit News, October 30, 2020, https://www.detroitnews.com/story/business/2020/10/29/grand-plan-redevelop-packard-plant-ruins-in-detroit-scrapped/6076466002/.

Design professionals must overcome several spatial challenges related to widespread abandonment to reinvigorate, repopulate, and recover their communities. A few of these spatial challenges include deindustrialization, political and economic restructuring, suburbanization, an aging population, disinvestment, and the abandonment of public facilities and landscape space, although there are many more to consider.[4] With the added pressures of a global pandemic, an economic recession, and widespread social unrest to deal with, many citizens and design professionals are growing increasingly worried about the future of public spaces in rural and urban communities.

In the last thirty to forty years, abandoned space has become much more recognizable in communities across the United States. The spatial voids created by abandonment processes have been studied extensively in urban contexts; however, there is little knowledge about the harmful effects of abandonment in rural contexts. Fortunately, Emma Fraser — an academic interested in virtual games, urban ruins, and digital platforms of intervention — has recently explored abandonment and displacement from a Midwestern perspective. In her investigation of abandoned spaces, Fraser has observed the emergence of *places of unbecoming*. These *unbecoming places* are places "in transition from occupied site to decay, regeneration or erasure."[5] Although they are 'in transition,' these spaces offer a new, albeit difficult, challenge for design professionals to address as they reconsider the identity of pre-existing underutilized space in urban and rural environments.

To more appropriately reinvigorate the underutilized space in their communities, architects, urban planners, and video game designers must work closely together to address complex issues of abandonment in new and creative ways. However, the precariousness of

[4] Emma Fraser, "Unbecoming Place: Urban Imaginaries in Transition in Detroit," In *Cultural Geographies*, 443.
[5] Fraser, "Unbecoming Place: Urban Imaginaries in Transition in Detroit," 446.

abandoned space makes it difficult for designers and their transdisciplinary partners to create a lasting impact that goes beyond the temporary. To make matters worse, the blighted blocks, vacant land, and unoccupied homes within shrinking cities overly support wealthy developers' interests in future-focused, positive city-branding endeavors. Unfortunately, in this process, many cities ignore the needs of local under-represented individuals.[6] To move away from these unethical design practices — in which vacant land is developed upon by the wealthy before it has a chance to exist as anything else — design professionals must invite more perspectives and disciplines to join the conversation surrounding abandoned space in the built environment.

Moving forward, a transdisciplinary partnership between the disciplines of landscape architecture and video game design — as well as adjacent fields of study — must be established. All too often, important design decisions are made by those either involved in developing the project or by those involved in supporting its development. As a result, the invisible needs of local community members are not addressed by design professionals to the extent they should be. To address local community members' diverse histories, experiences, and cultures, the design community must find new ways to create inclusive and interactive social spaces that allow for critical conversation and reflection to occur. Perhaps the introduction of digital networks and platforms — like virtual reality and video game design — into local abandoned sites could present an opportunity for community conversations to occur virtually. Not only would this assist designers in developing landscapes that respect the pre-existing histories and cultures of a site, but it would also help community members give critical feedback to designers as they create a new identity for an abandoned space.

[6] Fraser, "Unbecoming Place: Urban Imaginaries in Transition in Detroit," 449.

In the following pages, a literature review will explore the interconnected relationships between post-industrial and abandoned space in our communities, video game design in landscape architectural practice, and opportunities for educational intervention in public space.

05_Background [Literature Review]

ADDRESSING AN EXCESS OF ABANDONED SPACE IN LANDSCAPE ARCHITECTURAL PRACTICE

Landscape architects and urban planners play a crucial role in developing future identities for their country's many urban and rural spaces. Their process-based understanding of the ecological, economic, and social systems that influence physical landscapes is exceptionally beneficial to architects and interior designers in their design endeavors. Fortunately, landscape architects "recognize value in the abundant, cleared land; are comfortable with the slow process of its transformation; understand land management and maintenance as tools of design; and routinely operate across multiple scales… required for visionary restructuring."[7] However, as abandoned space becomes more and more abundant in the built environment, landscape architects must formulate a more holistic and transdisciplinary approach to designing places 'in transition.' In urban and rural settings with high levels of abandonment, an aging population and slowing birth rates play prominent roles in the shrinking process. However, population decline is also attributed to *white flight*, or "the departure of whites from places predominantly populated by minorities, as well as the mass migration of citizens from one place to another during times of

[7] Jill Desimini, "From Planned Shrinkage to Formerly Urban: Staking Landscape Architecture's Claim in the Shrinking City Debate" in *Landscape Journal*, 17.

hardship."[8] This is not always the case, however — especially in rural environments. More often than not, population decline in rural communities occurs as residents look for opportunities elsewhere.

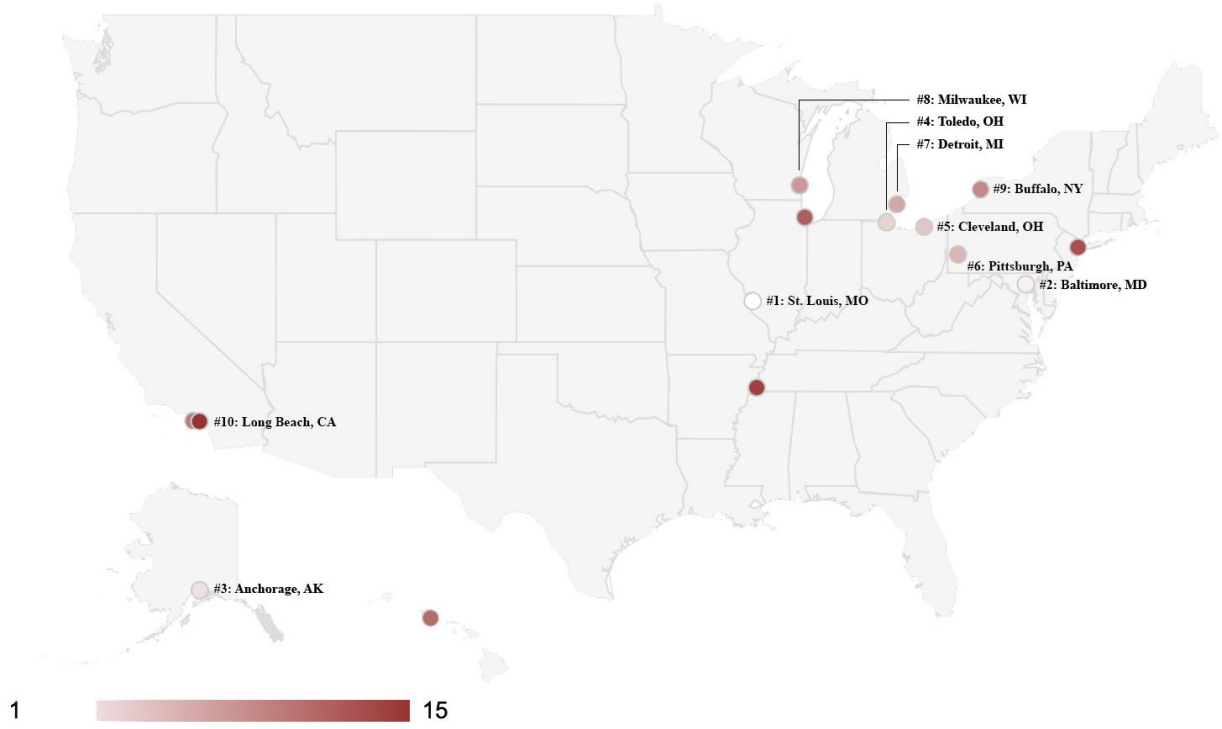

Figure 03: *Ten fastest shrinking large cities in the U.S. between 2014-2019*

The East and Midwest regions of the United States — including the Rust Belt and Great Plains — have been most affected by architectural and landscape abandonment in recent years. Cities like Detroit, St. Louis, and Baltimore face significant spatial challenges as their populations continue to shrink. The movement or closure of industrial companies that at one point provided well-paying jobs to middle-class citizens in these areas has negatively affected

[8] William Voegeli, "The Truth About White Flight," City Journal, August 2020, https://www.city-journal.org/truth-about-white-flight-from-cities.

communities in ways they could not predict. Currently, only two of the ten fastest-shrinking cities in the United States find themselves outside of these regions, as shown in Figure 03.[9] [10] Therefore, a significant challenge for design professionals in the Great Plains and Rust Belt areas has arisen. As citizens continue to leave urban and rural environments in search of new opportunities, what is to become of the built spaces and landscapes they leave behind?

Fortunately, landscape architects and urban designers play an essential role in establishing long-term, positive social change in communities of all sizes. They do so by providing citizens with opportunities to interact and engage with one another. It is their job to ensure that everyone's participation is welcomed and respected, and that the process isn't dominated by any one individual or group, or by any singular point of view. After all, "ethics and integrity are essential to our work."[11]

Although several pressing social issues — including racial injustice and a global pandemic — have shifted the way we communicate with one another, landscape architects and transdisciplinary partners must continue to construct unique, social spaces that exist both beyond and alongside the physical realm. Design professionals must adopt a participatory approach that involves everyone — and that means everyone — affected by the removal, rezoning, or reintroduction of space in the built environment. Not only will this assist design professionals in more respectfully designing constructed and natural environments, but it will also assist underrepresented community members in more actively voicing their opinions about designers' architectural decisions.

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[9] Lea Konczal, "Report: St. Louis Is America's Fastest-Shrinking City," St. Louis Business Journal, August 28, 2020, https://www.ksdk.com/article/news/local/business-journal/united-states-fastest-shrinking-cities/63-75f49d0f-b6c0-4f53-99e1-f06f82e90f84.

[10] Julius Olitan, *Fastest Shrinking Large Cities in the United States*, August 20, 2020, Digital image, AdvisorSmith, Accessed June 15, 2020, https://advisorsmith.com/data/fastest-growing-and-shrinking-large-cities-in-america/.

[11] "AIA Code of Ethics and Professional Conduct," The American Institute of Architects, Accessed March 5, 2021, https://www.aia.org/pages/3296-code-of-ethics-and-professional-conduct.

To more thoroughly understand abandoned space, landscape architects must critically reflect upon various perspectives within the design community. Matthew Gandy — a Professor of Cultural and Historical Geography at the University of Cambridge in England — suggests that "places that appear 'useless' to the momentary glance of passing commuters might nonetheless be spaces of adventure, imagination, and self-discovery for artists, children, filmmakers, and other explorers of the urban realm."[12] Abandoned spaces — whether they exist in the city center or the countryside — create intriguing potentials for civic engagement; they represent voids in our urban fabric that are ripe for consideration in existing design discourse.

Although Matthew Gandy explored abandoned space from a perspective of potentiality, McLain Clutter describes these same abandoned spaces as *ruin porn*. In his opinion, this notion of abandoned space "elicits a mixture of immediate visual pleasure and lingering ethical guilt" as passersby stop to explore the ruins of a once-vibrant space.[13] Furthermore, he suggests that it's the "objects, structures, and moments in our lives that are met with some measure of mystery that we find so intriguing."[14] Fueled by an intense fascination with what once was, visitors of urban and rural ruins often take photos, blog their experiences, and return to the scene later on to continue their exploration. As design professionals deal with *ruin porn* in urban and rural contexts, they might also attempt to represent the familiar in an unfamiliar way. After all, artists, writers, and scientists — who often look to the past for inspiration — remind us that "looking, thinking, and representing the familiar in an unfamiliar way can also be a kind of radical, cultural and political praxis."[15]

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[12] Matthew Gandy, "Marginalia: Aesthetics, Ecology, and Urban Wastelands" in *Annals of the Association of American Geographers*, 1302.
[13] McLain Clutter, "Notes on Ruin Porn," The Avery Review, 2016, http://www.averyreview.com/issues/18/notes-on-ruin-porn.
[14] Clutter, "Notes on Ruin Porn"
[15] Clutter, "Notes on Ruin Porn"

On the other hand, Jill Desimini — an Associate Professor of Landscape Architecture at the Harvard Graduate School of Design — argues that the systems-based approach we currently apply to post-industrial landscapes must address and positively impact both the site-scale and the larger community beyond the site. Desimini considers the rise of temporary architecture as a possible solution to dealing with abandoned space because of its flexibility and adaptability; however, she ultimately argues against it because of its short-lived effect on the built environment. Instead, she proposes a four-part framework — involving context, time, maintenance, and scale — to deal with issues of abandonment. Although it provides landscape architects with an initial list of considerations to think over, Desimini's design framework could have further explored design limitations related to access, communication, and participatory processes concerning abandoned space.[16]

As shrinking cities continue to lose population due to loss and neglect, the changing density of the built environment, and many other social factors, landscape architects and urban designers must consider an updated design framework to address abandoned space in urban and rural contexts. However, "open urban land is complex, with simultaneous pressures to be a civic amenity, an infrastructural link, an environmental asset, and an economic driver."[17] Additionally, landscape architecture projects require time to develop culturally and ecologically. The capitalist imperative — which has controlled the fate of architecture for quite some time — forces land to be developed upon faster than it can naturally grow and does not consider the ecological and social systems that it destroys, dislocates, or destabilizes. As long as the field of landscape

[16] Desimini, "From Planned Shrinkage to Formerly Urban," 32.
[17] Desimini, "From Planned Shrinkage to Formerly Urban," 17.

architecture exists within this capitalist construct, design professionals will continue to work within neoliberal regimes, which often value wealth and power over community resiliency.[18]

Because of its importance to culture, entertainment, and technological advancement, the video game industry may help design professionals as they investigate the role technology plays in society's increasingly digital environments. Although Desimini, Gandy, and Clutter offer their thoughts on how to deal with abandoned space from an ecological perspective, landscape architects and urban planners must continue to challenge themselves to develop transdisciplinary practices that allow for inclusive collaboration, community engagement, and experimentation to occur outside of their disciplines. Designers must head in the direction of the digital in coming years. Going in the direction of the digital will help build connections across communities and provide new space for interaction and engagement to occur even when in-person interaction cannot happen. A participatory approach to design is needed to address abandoned space and unify existing shrinking communities.

VIDEO GAME DESIGN IN LANDSCAPE ARCHITECTURE

Since the late 1980s and early 1990s, virtual environments in landscape architecture have advanced considerably. Even before this time, an influential figure in the landscape architecture community was Ian McHarg. He was one of the first designers to investigate digital workflows and ecology as a basis for design and planning. His interests in design and 1969 landmark book Design With Nature contributed immensely to the eventual creation of Geographic Information Systems (GIS). Additionally, he created what is known as "McHarg's Method," which describes how, through a "multidisciplinary analysis of a region's ecological sensitivity, different

[18] Sanchez, Jose. *Architecture for the Commons: Participatory Systems in the Age of Platforms*. London ; New York: Routledge, Taylor et Francis Group, 2021.

information can be layered and combined geographically to identify suitability for different types of development and use."[19] In his lifetime, McHarg played an essential role in 'digitalizing' the field of landscape architecture.

Before the turn of the century, landscape architects drew nearly everything by hand. As a result, "digitally rendered visualization was… used as a tool for crude visual representation of landscape and landscape change" for quite some time.[20] It was not until 1982 that software applications for landscape architects and urban planners emerged. The introduction of AutoCAD — a computer-aided design (CAD) software that allows design professionals to create detailed 2D and 3D drawings of their projects — revolutionized the construction and design industries by increasing the accuracy and efficiency of their design processes. For many years, AutoCAD, Adobe Photoshop (a software application for image editing and photo retouching), and SketchUp (a design software for 3D modeling and form generation) made up the *big three* technologies. The *big three* refers to the three pieces of technology that landscape architects have most commonly used to engage in the design process. As technology has advanced, however, designers have become much more skilled in building incredible physical and virtual environments using a more comprehensive array of design software and applications.[21]

In recent years, hardware has become much less expensive to operate. Additionally, the software landscape architects use has become more accessible, and technical assistance has become more widely available, which has helped to advance 3D modeling and landscape visualization in landscape architectural practice. Virtual environments in landscape architecture can be created relatively quickly at a very high level of craft, using several free and purchasable

[19] "Ian McHarg." URISA. Accessed January 15, 2021. https://www.urisa.org/awards/ian-mcharg/.
[20] Sigrid Hehl-Lange and Eckart Lange, "Chapter 10: Virtual Environments." Essay, In *Research in Landscape Architecture: Methods and Methodology*, 165.
[21] Benjamin H. George and Peter Summerlin, "GET WITH THE PROGRAM," Landscape Architecture Magazine, December 2, 2019.

software applications. The profession has expanded upon its use of the *big three* technologies to include applications like Rhinoceros 3D, Lumion, Illustrator, InDesign, GIS, ArcMap, VectorWorks, and many more. Workflows have become much more streamlined as landscape architects use SketchUp or Rhinoceros 3D to model their ideas, Lumion to render their designs, and Photoshop to post-process and edit their renders. As technology has become more advanced, landscape architects can now even use Grasshopper — a parametric plug-in for Rhinoceros 3D — to create parametric design that allows clients to experience space in virtual reality (VR) formats. Future landscape architects should continue to investigate this upward digital trend. They must look for new ways to create interactive and participatory public spaces that are accessible to as many citizens as possible, regardless of their background. However, landscape architects must also remember that clients and community members are not always visual thinkers; therefore, design professionals must use a variety of media types to generate attention and interest among the public.[22] Perhaps video game design, which is already a popular media type, could be more naturally integrated into landscape architect's daily practices.

Many reputable figures within the design community support the integration of video game methodologies into the field of landscape architecture. For example, Henry Jenkins — the Provost Professor of Communication, Journalism, Cinematic Arts, and Education at the University of Southern California — reminds designers that the video game industry is distinguishable from other media types because of its emphasis on narratology, which is also a distinguishing characteristic and emphasis of landscape architecture. Instead of telling simple stories, design professionals and video game designers must work together to create virtual worlds and sculpt spaces with powerful narratives that users can uncover in unique and creative

[22] George and Summerlin, "GET WITH THE PROGRAM."

ways. In fact, their goal "should be to foster [a] diversification of genres, aesthetics, and audiences to open gamers to the broadest possible range of experiences."[23]

Video game designers have several analytical tools, work methods, and documentation techniques to develop immersive video games. A well-known approach to designing video games is the *MDA framework* (features in Figure 04[24], which explores the *mechanics*, *dynamics*, and *aesthetics* of video game experiences. A video game's *mechanics* reflect the rules, actions, and control mechanisms that players are allowed within the game context. Furthermore, they support gameplay *dynamics*. A video game's *dynamics* explain the game's behavior and work to create specific *aesthetic* experiences for players to react to. Finally, a video game's *aesthetics* explore the emotional effects the game has on the player. Although the MDA framework is too generic to support the development of complex virtual environments, it provides designers with a manageable list of topics to consider before designing their projects.[25]

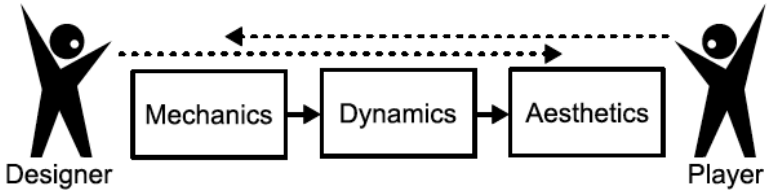

Figure 04: *MDA framework diagram*

Another approach to designing video games involves mapping games' *state machines*. A game's state "reflects the player's location, the location of other players, allies and enemies, and the current distribution of vital game resources."[26] Game *state machines* are especially useful at the beginning of the design process because they help video game designers visualize a player's

[23] Jenkins, Henry. "Game Design as Narrative Architecture." In *Computer*, 129.
[24] R. Hunicke, M. LeBlanc, & R. Zubek, *The MDA Framework*, Digital image, 2012, Digital image, In *Proceedings of the AAAI-04 Workshop on Challenges*, Accessed July 10, 2020, https://pure.uva.nl/ws/files/1167833/102090_08.pdf.
[25] J. Dormans, "Game Design Theory," In *Engineering Emergence: Applied Theory for Game Design*, 47.
[26] J. Dormans, "Game Design Theory," In *Engineering Emergence: Applied Theory for Game Design*,: 48.

progress toward a specific goal at different intervals. Generally, video game designers utilize two particular types of game *state machines*. In *finite state machines*, as shown in Figure 05[27], game developers can enforce each player to confront a specific set of circumstances that lead them to a particular goal. Most often, game developers utilize *finite state machines*. However, *looping finite state machines*, as shown in Figure 06[28], are also commonly used. By incorporating loops into the framework, designers can provide players with an abundance of complex choices to consider as they navigate a gaming experience.[29]

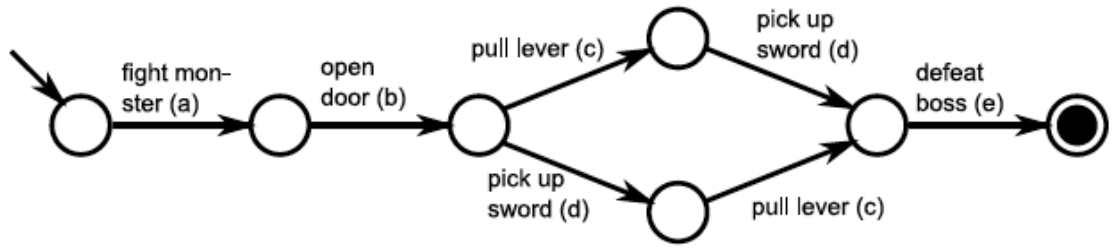

Figure 05: *Example of a finite state machine in video game design*

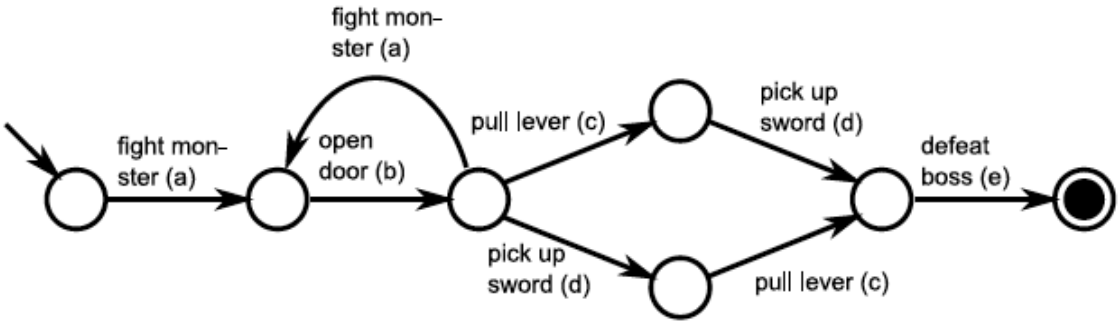

Figure 06: *Example of a looping finite state machine in video game design*

[27] J. Dormans, *A finite state machine representing an adventure game*, 2012, Digital image, In *Engineering Emergence: Applied Theory for Game Design*, Accessed July 20, 2020, https://pure.uva.nl/ws/files/1167833/102090_08.pdf.
[28] J. Dormans, *A more complex finite state machine, but one that still produces a finite set of trajectories*, 2012, Digital image, In *Engineering Emergence: Applied Theory for Game Design*, Accessed July 20, 2020, https://pure.uva.nl/ws/files/1167833/102090_08.pdf.
[29] J. Dormans, "Game Design Theory," In *Engineering Emergence: Applied Theory for Game Design*, 53-55.

There is immense complexity in developing virtual environments in landscape architectural practice; therefore, a more thorough understanding of video game design could support the landscape architecture community's various endeavors. The existing discourse surrounding video game design in landscape architectural practice has exploded in the last few years. However, there is still too much emphasis on AutoCAD as the leading design software to use. Of course, "there [has] always been alternatives, but AutoCAD offered the first opportunity to collaborate and coordinate multiple users [across disciplines]. There is too much institutional knowledge in most firms to effectively pull a 180 and switch to something new and different."[30] Although AutoCAD is an essential design tool for traditional landscape architectural projects, perhaps a technological industry shift is needed to engage more thoroughly with the public in emerging virtual ways.

Because landscape architecture finds itself at the intersection of multiple disciplines — including ecology, horticulture, engineering, urban planning, and architecture — there is no easily identifiable path for landscape architects to follow as they begin their design processes. Generally, a typical workflow involves drafting a design in AutoCAD, exporting its linework to Illustrator to develop a graphic plan, exporting that to SketchUp or Rhinoceros 3D to create three-dimensional forms and models, and then finally moving renders and other visual imagery into Photoshop to edit. This workflow is complex, timely, and not entirely sustainable: in fact, if the design changes at any point throughout this process, a landscape architect must go back and adjust the design in many different software applications. The gamification of public space could solve this problem. Perhaps integrating immersive video game experiences into urban and rural

[30] George and Summerlin, "GET WITH THE PROGRAM."

communities' social fabric is an essential next step in landscape architecture's journey toward addressing abandonment issues and a less-than-ideal digital workflow.

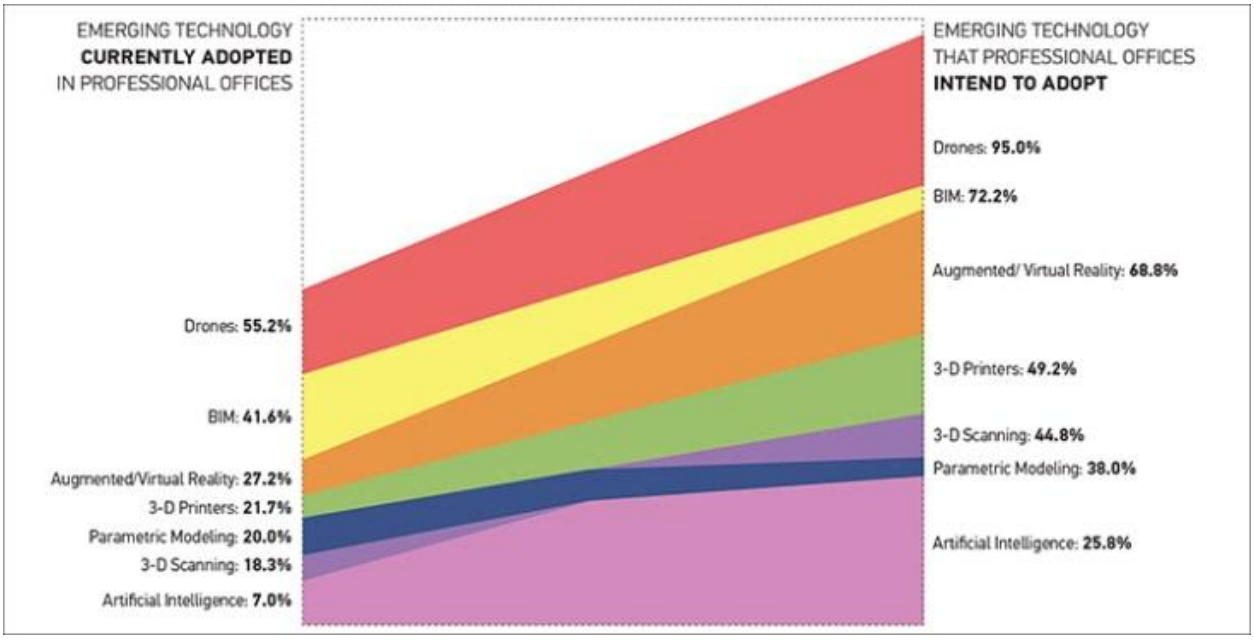

Figure 07: *Current and future technology use in landscape architecture*

Thankfully, a new digital paradigm is emerging, as shown in Figure 07.[31] According to a national survey conducted by ASLA's Digital Professional Practice Network (DTPPN) and professors from Utah State University and Mississippi State University, this paradigm shift will help expand landscape architects' design, communication, and collaboration capabilities. Fortunately, "there is a new cohort of emerging designers equipped with the software skills to help firms adopt new technologies and methodologies."[32] Although the use of drones, building information modeling (BIM), and VR in landscape architectural practice is becoming more and

[31] Benjamin H. George, *Landscape architects are rapidly adopting emerging technologies*, 2019, Digital image, Landscape Architecture Magazine, Accessed January 10, 2021, https://landscapearchitecturemagazine.org/2019/11/05/get-with-the-program/.
[32] George and Summerlin, "GET WITH THE PROGRAM."

more common, design firms must continue to investigate which digital tools are most appropriate for use.

Perhaps more so than other media types, VR has incredible potential to be used in landscape architectural practice. Virtual reality is a "component of communication which takes place in a computer-generated synthetic space and embeds humans as an integral part of the system…".[33] To more deeply understand how digital world-building can affect conditions of social and spatial marginality, landscape architects should consider integrating VR more thoroughly into their design process. With potential use in site planning, landscape restoration, parks and recreation planning, green infrastructure planning, residence landscape master planning, and more, VR could remain an essential resource across the design disciplines of landscape architecture and environmental planning for years to come. However, design professionals must use VR in more spatial and temporal scales to increase its overall usage within the industry. Fortunately, by "conducting experiments in a VR lab, questions about landscape perceptions, preferences, and user route choices as affected by landscape design can be answered."[34] As emerging design mediums, VR and video game design could unlock a new set of skills in landscape architects: skills that aid in creating meaningful outdoor space that connects community members to one another.

Nevertheless, the use of VR in landscape architecture has its fair share of challenges and complications. For example, there is a lack of research addressing best practices for its use in landscape architectural practice, as well as what is to be gained through its use in adjacent disciplines of design. There are also concerns regarding the moral and ethical dilemmas that

[33] M.E. Portman, A. Natapov and D. Fisher-Gewirtzman, "To Go Where No Man Has Gone Before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning," In *Computers, Environment and Urban Systems*, 377.
[34] Portman, Natapov and Fisher-Gewirtzman, "To Go Where No Man Has Gone Before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning," In *Computers, Environment and Urban Systems*, 380.

emerge at various landscape scales when it comes to climate change adaptation and response.[35] Landscape architects and urban designers must address these issues soon if they are to integrate new and emerging technologies into their daily practices in the future.

The transdisciplinary partnership between landscape architects and video game designers could revolutionize how design professionals think about physical and virtual space. However, designers must continue to respect pre-existing cultures and backgrounds as they design new landscapes and architectural spaces. As the profession continues to adopt emerging methodologies into its palimpsest of design processes, the field of landscape architecture must offer unique opportunities for education, social activism, and positive social discourse to occur both on-site and virtually.

LANDSCAPE ARCHITECTURE'S ROLE IN EDUCATION AND SOCIAL ACTIVISM

The design disciplines of architecture, landscape architecture, and interior design are often deeply involved in conversations surrounding racism, capitalism, and colonial legacies. As wealthy developers target neighborhood abandoned spaces to redevelop, new urban and rural migrants come swarming in. These "new migrants range from artists and urban farmers to developers and entrepreneurs. Yet, what they share, as did early U.S. settlers, is their relative access to capital, being predominantly white, and their quest for land and opportunity, whether driven by desire for self-reliance, monetary accumulation, or quality of life."[36] Often, modern settlers do not connect their migratory actions to the discriminatory acts of erasure that occurred in the United State's recent past. However, designers need to realize that "the legacy of slavery

[35] Portman, Natapov and Fisher-Gewirtzman, "To Go Where No Man Has Gone Before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning," In *Computers, Environment and Urban Systems*, 380.
[36] Sara Safransky, "Greening the Urban Frontier: Race, Property, and Resettlement in Detroit," In *Geoforum*, 241.

and seizure of land from Native Americans created not only a racist property law regime, but an actual property interested in whiteness… [where] racism has shaped who owns what, which forms of ownership are recognized and legitimated, and which practices are considered sufficient to establish possession."[37] Although the United States is not the only country in the world with a complex history of settler colonialism, design professionals must remain mindful of their actions' significant racial and cultural implications. Thankfully, many design firms and video game developers worldwide have acknowledged their past racial and cultural incompetence and are now working to give voice and agency to underrepresented communities. For example, the developers of the iconic video game *The Oregon Trail* have only recently addressed their longstanding history of ignoring the displacement of Native Americans in their games. For the first time in the series' history, "Native American characters are playable, showcasing the stories and cultures of the people that lived in America before it was colonized — and that still exist to this day."[38] By involving Native American scholars in the game's development, game developers crafted a more nuanced and respectful representation of indigenous cultures throughout the design process. At the beginning of the game, a disclaimer provides this vital information to the player. Virtual platforms can increase cultural competence in our communities, but design professionals must integrate them in respectful and inclusive ways.

By providing opportunities for cooperative learning to emerge in our built and natural environments, the design profession might finally be able to address several social issues that it has for many years ignored (e.g., institutional racism, homophobia, transphobia, etc.). Each design discipline must integrate cooperative learning opportunities to address these social issues within their projects. Although designers already incorporate cooperative learning into their

[37] Safransky, "Greening the Urban Frontier: Race, Property, and Resettlement in Detroit," 246.
[38] Jenny Geist, "Oregon Trail on Apple Arcade Has Better Representation for Native American Stories," Game Rant, April 4, 2021. https://gamerant.com/oregon-trail-apple-arcade-native-american-representation/.

projects in many ways, they must prioritize a "commitment to one's own and others' success and well-being, commitment to the common good," and support "the view that facilitating and promoting the success of others is a natural way of life." [39] Dr. Tristan McCowan — a Professor of International Education at the UCL Institute of Education in London — has thoroughly investigated cooperative learning environments and an individual's right to education. He suggests that designers should focus "on students engaging in research [through] a local environmental problem from which a range of knowledge, skills, and values [could] emerge, rather than predefining the exact attributes to be acquired."[40] By focusing more on the design process and less on the design outcomes of a project, landscape architects might understand the needs and wants more accurately of the local community within which they are serving.

The issue of accessibility has become much more relevant as information systems and the Internet have become more widely used. In the past, accessibility issues were mainly disregarded and ignored within the built environment; in fact, few accommodations were provided to those who needed them. Currently, according to the 2010 U.S. Census Bureau, 8.6% of the U.S. population under the age of 65 and 4.3% of children have some level of disability that bars them from engaging fully in their daily activities.[41] As a result, it is essential to remember that "if video games are to play a role in education, accessibility cannot be left behind."[42] To bring issues of accessibility to the forefront of design discourse, landscape architects and video game designers must focus on the input and output systems of their virtual world-building creations. By incorporating alternative input and output systems into the design of their virtual

[39] David W. Johnson and Roger T. Johnson, "An Educational Psychology Success Story: Social Interdependence Theory and Cooperative Learning," In *Educational Researcher*, 372.
[40] Tristan McCowan, "Reframing the Universal Right to Education," In *Comparative Education*, 518.
[41] "Explore Data," United States Census Bureau, https://www.census.gov/.
[42] Torrente, Del Blanco, Moreno-Ger, Martínez-Ortiz, and Fernández-Manjón, "Implementing Accessibility in Educational Videogames with <e-Adventure>," In *1st ACM International Workshop on Multimedia Technologies for Distance Learning*, 58.

environments, video game designers can better accommodate those who have visual, hearing, and mobility impairments. Additional issues of accessibility can be addressed through the adjustment of various game parameters, as well. For example, cognitive and mental impairments may require a game's difficulty to be lessened or the text and speech speed to be adjusted.

As landscape architects and urban designers consider integrating video game methodologies and practices into their projects, they must continue to design with everyone in mind.[43] After all, is a design project successful if it does not consider the opinions of those who will eventually interact with the project? To better understand the role that education and social activism could play in landscape architectural practice, design professionals must consider the many opinions, ideas, and interests of local community members.

[43] Torrent et al., "Implementing Accessibility in Educational Videogames with <e-Adventure>," 60-61.

06_Methods

This undergraduate Honors thesis used a mixed-methods approach to investigate how virtual landscape space relates to physical landscape space and what techniques might be adopted from the video game industry by landscape architects and urban designers. If the field of landscape architecture is to continue to progress, landscape architects must work to better understand the interconnected relationship between the various methodologies used in landscape architecture and video game design. A literature review of relevant information pertaining to abandoned space in urban and rural environments, video game design, and educational intervention opportunities helped offer insight into the existing challenges the landscape architecture profession is currently facing regarding emerging technological advancements.

To more fully understand how to address emerging design mediums in landscape architecture (like video games), a comparative analysis of the mechanics, dynamics, and aesthetics of three widely-played and thoroughly awarded video games — including *The Witness*, *Common'hood*, and *Animal Crossing: New Horizons* — was conducted to portray the variety of ways in which virtual landscapes can be created and visualized. Each game represents a vastly different playing style, which may help generate ideas for the future use of video game design in landscape architectural practice. Additionally, each game has specific goals and objectives that encourage interaction as one navigates through virtual space. A comparative analysis of these games will help designers better understand how they might bring the freedom and fun of virtual environment-building into the physical realm.

07_Comparative Analysis

OVERVIEW

In his graduate thesis — which thoroughly discusses video game design in landscape architecture — Fredrik Thuning mentions that "virtual landscapes… can be considered architectural as they are a simulation of physical space in a virtual realm."[44] He even goes on to suggest that "virtual landscapes can be considered real landscapes. Real landscapes confined to a virtual world, a world that is non-physical but that can still be explored and interacted with."[45]

Each video game selected for this comparative analysis represents a virtual landscape environment created in varying ecological and historical backgrounds, contexts, and timelines. What sets them apart from other video games of their genre and level of caliber is their focus on the nuances of the human experience. Rather than designing a video game to make money and attract attention, it appears the game developers of *The Witness*, *Common'hood*, and *Animal Crossing: New Horizons* chose to design their video games to encourage critical thinking and awareness of social issues. It also appears that the worlds they have created to facilitate these conversations could not possibly be implemented in 'real-life.' This allowed those involved in the creation of these video games the freedom to develop their mechanics, dynamics, and aesthetics to facilitate the specific interactions they wanted players to get out of their games. Although this study could have included many more video games, *The Witness*, *Common'hood*, and *Animal Crossing: New Horizons* offer incredible insight into how landscape architects might

[44] Fredrik Thunin, "Landscape Architecture in Video Games: a Design Experiment of a Virtual Landscape," Thesis, 9, https://stud.epsilon.slu.se/14032/1/thuning_f_181211.pdf.
[45] Fredrik Thunin, "Landscape Architecture in Video Games: a Design Experiment of a Virtual Landscape," 10.

incorporate video game methodologies and virtual platforms into their existing or abandoned projects.

GAME 1: *THE WITNESS*

Figure 08: *The island in The Witness*

In the 2016 video game *The Witness*, each player begins in a dimly lit cave with only a singular door to exit through. The door — a recurring symbol in video games of the past and present — acts as a threshold between the space the player occupies and the destinations that lie beyond it. As each player exits the cave, they find themselves in somewhat unfamiliar conditions. Although *The Witness* features a freely navigable, open-world environment (as shown in Figure 08[46]), the game's players realize rather quickly that they are trapped on an island

[46] Thekla, *The Witness Island at the time of game publishing*, May 26, 2017, Digital image, Fletcher Studio, Accessed February 15, 2021, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.

with no way to escape. To further unlock the island's secrets, players must explore and complete multiple puzzles located throughout the site. The game's developers give a more appropriate description of the popular video game:

> As a video game, *The Witness* is an intellectually challenging work of art. It is an adventure puzzle, set on a complex and mysterious abandoned island, populated with a multitude of biomes, geologies, cultures, and seasons. It expresses the overlaid palimpsests of fictional civilizations that have been planned and designed using the media of time and entropy. There are no guns. There is no high score. You are not competing with anyone. It is simply you and your brain solving puzzles, exploring a fictional world with a larger narrative that unfolds as you progress.[47]

By emphasizing how the game is supposed to work, video game developers give players an initial glimpse into their game's mechanics, or rules. The game's independent developer, Jonathan Blow, had two important goals as he began work on the project: 1) to encourage users to become more sensitive to their surrounding environment, and 2) to encourage users to achieve a sense of accomplishment and enlightenment throughout their gameplay experience. To reflect these goals, "gameplay progresses as [players] solve approximately 650 maze-based puzzles, each with their own mechanics and symbols… Solutions are learned through environmental clues, prior puzzle solutions, and through listening to audio recordings found in the environment."[48] Instead of diving into his work blindly, Blow realized he needed to collaborate with experts in the design community who had experience designing actual landscapes. Naturally, he contacted Fletcher Studios — a landscape architecture and urban design collaborative based in San Francisco — to give structure and authenticity to his grand ideas. In *The Witness*, every object that can be interacted with has a particular purpose. Blow made this

[47] Fletcher Studios and Thekla, "The Witness: Designing Video Game Environments," Web blog, *Fletcher Studio*, May 26, 2017, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.
[48] Fletcher Studios and Thekla, "The Witness: Designing Video Game Environments," Web blog.

decision to further develop the game's dynamics, or behavior. As each player enters the virtual environment Blow and his transdisciplinary partners created, they might choose to accomplish different tasks. Some players might decide to tackle the first puzzle they see to unlock more information about their surrounding environments. In contrast, others might choose to freely roam the virtual environment to unlock additional information about the surrounding context. Both approaches are valid and offer players several choices to consider as they navigate the game's breathtaking virtual environment.

Figure 09: *The island's 19 distinct areas*

Although the dynamics of a video game experience can reflect the game's randomness and differing levels of complexity, it can also refer to the game's dynamic behavior as players make decisions in the spaces they arrive in. An open-world environment encourages exploration in The Witness. In fact, the game's intense focus on puzzles, mazes, and games to further unlock

the island's secrets keeps players incredibly engaged as they play. The game also becomes progressively more challenging as players complete tasks and solve the island's puzzles. An emphasis on the game dynamics concerning each player's individual choices helped Jonathan Blow and Fletcher Studios create an immersive virtual environment with a purpose. Perhaps landscape architects and urban designers could adopt similar strategies to engage everyday citizens in their surrounding environment more fully.

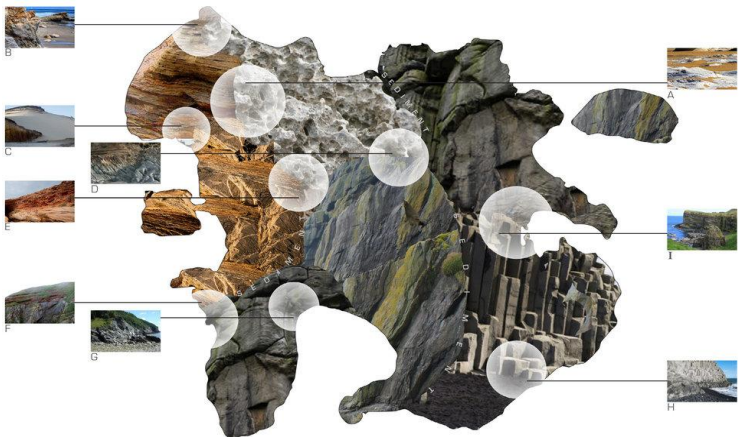

Figure 10: *The island's geological character*

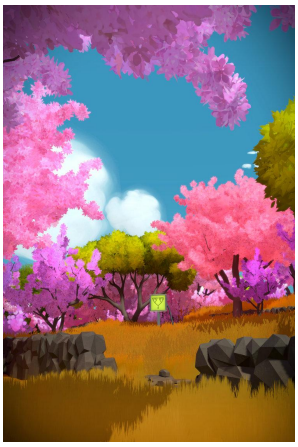

Figure 11: *The Witness's bright and distracting aesthetics*

The developers of *The Witness* put immense thought into the game's aesthetics, or the emotional effects the game was designed to have on players. Based loosely on the secret islands in the Archipelago of the Azores, as indicated in Figure 10[49], the island environments created by Blow and Fletcher Studios are meant to look and feel familiar, but in an unfamiliar way. One moment a player could find themselves among a forest of trees, while in the next, they might find themselves atop a volcanic cone. As players explore the island's 19 distinct ecological areas — which are shown in Figure 09[50] — attractive spaces of enclosure and containment draw them

[49] Thekla, *Geology*, May 26, 2017, Digital image, Fletcher Studio, Accessed February 15, 2021, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.
[50] Thekla, *Map of Island zones*, May 26, 2017, Digital image, Fletcher Studio, Accessed February 15, 2021, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.

further into the game. Because *The Witness* is rendered in bright, almost distracting hues, the game's visual aesthetic is quite intriguing, as represented in Figure 11.[51] As reflected by the widespread critical acclaim it received, *The Witness* is a beautifully crafted video game that offers many interrelated and diverse spaces to interact with simultaneously.[52] The game was nominated for several awards upon its release in 2016 and has inspired both game designers and landscape architects to be more observant and innovative in their design considerations.

GAME 2: *COMMON'HOOD*

Figure 12: *A depiction of eviction in Common'hood*

Similarly, *Common'hood* — a video game centered around hardship and community — forces its players to confront the sometimes harsh realities of the human experience. The game

[51] Thekla, *Puzzle group tied to environmental cues*, May 26, 2017, Digital image, Fletcher Studio, Accessed February 15, 2021, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.
[52] Fletcher Studios and Thekla, "The Witness: Designing Video Game Environments," Web blog.

begins with a devastating backstory. After an economic crash, a fictional community facing mass eviction is forced to relocate to a nearby abandoned factory. Although the abandoned space offers little to nothing in the form of resources, players can scavenge for materials and craft the shelters, products, and pieces of equipment they need to successfully improve their lives and the longevity of their makeshift community. *Common'hood* encourages players to build their life within the confines of this old abandoned factory by celebrating the power of togetherness. As newcomers arrive at the abandoned site, each player's responsibility is to provide them with the shelter, water, and food they need to survive in exchange for their valuable skills, as shown in Figure 12.[53] [54]

An emphasis on critical thinking, innovation, and survival makes the mechanic qualities of *Common'hood* quite successful. For many years, Jose Sanchez — the architect, game designer, and theorist behind the development of the game — has been interested in creating "digital social platforms that aid [in] the authoring of architectural and ecological thinking to non-expert audiences."[55] As Sanchez mentions, architectural discourse is often more challenging to understand than it needs to be, which bars many important community members from participating in the conversation surrounding design. Because *Common'hood* operates like a survival simulation, it places much more interest on its displaced community members' survival stories. By focusing on *Common'hood*'s narratological themes and adventures, its developers created a compelling set of mechanics through which the game operates.

Unlike *The Witness*, *Common'hood* does not offer many adjustable gameplay experiences. Instead, the dynamics, or behavior, of *Common'hood* are based much more on

[53] Jose Sanchez, "Common'hood," Plethora Project, Accessed January 15, 2021. https://www.plethora-project.com/commonhood.
[54] Jose Sanchez, *Common'hood 1*, 2021, Digital image, Plethora Project, Accessed February 21, 2021, https://www.common-hood.com.
[55] Sanchez, "Common'hood," Plethora Project.

randomness or by chance of circumstance. For example, a random assortment of skillful, evicted citizens seek refuge at the repurposed factory, as shown in Figure 13[56]; however, it is up to the player to strategically assess each newcomers' skills, interests, and backgrounds to most effectively integrate them onto the team. As a player begins a new game in *Common'hood*, there is no telling what experiences they might face next. This erratic gameplay behavior keeps players coming back because each experience is different enough than the last to warrant a second attempt at the game.

Figure 13: *A gathering of local migrants in the old abandoned factory in Common'hood*

As he developed *Common'hood*, Jose Sanchez carefully portrayed a grim urban issue in an exciting and easy-to-understand way. In doing so, he helped make confusing architectural concepts like automation, sustainability, and economics much easier to understand. Since the coronavirus pandemic has begun, there has been a considerable increase in evictions as more and

[56] Jose Sanchez, *Common'hood 2*, 2021, Digital image, Plethora Project, Accessed February 21, 2021, https://www.common-hood.com.

more citizens have been unable to pay rent and other bills.[57] Rather than burying this issue, Sanchez brings it to light by gamifying the experience. A virtual, gamified experience of the typical urban and rural issue of eviction encourages the players of his game to sympathize with those facing similar situations in real life. Of course, it is not often that a community might face mass eviction; however, Sanchez's clever use of video game design to respond to a familiar landscape architectural challenge opens up a wide array of opportunities for other landscape architects and urban designers to do the same. Jose Sanchez continues to explore these concepts and more in another of his video games, entitled Block'hood.

GAME 3 - *ANIMAL CROSSING: NEW HORIZONS*

Figure 14: *A community party in Animal Crossing: New Horizons*

[57] Chris Burbach, "Coronavirus Halts Most Court Activity, but Evictions Still Pack Nebraska Courtrooms," Omaha World Herald, November 25, 2020. https://omaha.com/news/state-and-regional/coronavirus-halts-most-court-activity-but-evictions-still-pack-nebraska-courtrooms/article_b2793264-d90d-542d-a010-6f7f42b19f9c.html.

Animal Crossing: New Horizons (*ACNH*) was released a little over a year ago, on March 20th, 2020, just as the global coronavirus pandemic began. Initially, the game was so sought after by fans that it affected the Nintendo Switch's availability, on which the game can be played. In a time of isolation, players were looking for a wholesome gaming experience that was larger than life. Several prevalent media outlets discussed the popularity of *ACNH* in the last year, including the New York Times. In April of 2020, The New York Times explained that:

> When Nintendo launched *'Animal Crossing: New Horizons'* on March 20, it was fortuitously timed to the sudden closure of much of society as the coronavirus pandemic spread. Millions of people were forced indoors, including millions of children, and many turned to Nintendo's blockbuster life simulation game on the Nintendo Switch for something to do.[58]

In the game, "players take on the role of a lone human on an island filled with pudgy anthropomorphic animals" and "are tasked with building a thriving society, filling it with shops, bridges and other accommodations for its residents."[59] Players progress through the game at a relaxed pace, in which the player can choose how much or how little they want to do on any given day. The developers behind *ACNH* had a singular goal in mind as they worked: to create a video game experience that provided comfort and social connection in a time of isolation and struggle. This is reflected within Figure 14[60], as well as the mechanics of the game.

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[58] Ben Gilbert, "Nintendo's Switch Remains Sold Out Everywhere as the Pandemic Stretches On - and There's No End in Sight," Business Insider, July 30, 2020, https://www.businessinsider.com/nintendo-switch-still-sold-out-in-mid-summer-2020-7.

[59] Imad Khan, "Why Animal Crossing Is the Game for the Coronavirus Moment," The New York Times, April 7, 2020, https://www.nytimes.com/2020/04/07/arts/animal-crossing-covid-coronavirus-popularity-millennials.html.

[60] Nintendo, *In millions of tweets about the game, people praise its ability to provide comfort and social connections*, April 7, 2020, Digital image, The New York Times, Accessed February 10, 2021, https://www.nytimes.com/2020/04/07/arts/animal-crossing-covid-coronavirus-popularity-millennials.html.

Figure 15: *Three anthropomorphic characters in ACNH (from left to right: Tommy, Tom, and Timmy Nook)*

A series of important rules and hierarchical structures are laid out as soon as the game begins. Similar to The Witness, players of *ACNH* find themselves on a seemingly deserted island. After a quick chat with the island's anthropomorphic characters, including Timmy, Tommy, and Tom Nook (shown in Figure 15[61]), an economic and social construct is gently enforced. Each player is encouraged to collect materials on the island, craft valuable tools and resources, investigate local flora and fauna, and socialize with other players to advance the game's storyline. The game's mechanics allows for a free-flowing gameplay experience to occur. However, players cannot make progress without Tom Nook's consent. A new, but all-too-familiar, economic construct is enforced upon players as they take out loans from the infamous Tom Nook to pay for homes and other essential features on their island.

Although *ACNH* enforces several rules upon its players as they navigate its virtual space, the game also encourages players to take their time cultivating the island of their dreams. Similar

[61] Nintendo, *Tom Nook stands at the center of Animal Crossing*, April 19, 2020, Digital image, PaperCity Magazine, Accessed February 26, 2021, https://www.papercitymag.com/culture/animal-crossing-playing-wrong-tom-nook-evil-consipracy-theories/.

to *Common'hood*, the game's dynamics reflect a certain randomness. Each time a player visits their island, new shells, critters, fruits, and materials can be harvested and collected, and sold for a profit to the Nooks. Although players must spend a significant amount of time gathering resources and accumulating Bells (the game's currency) to progress gameplay, players could spend an even more substantial amount of time fishing, discovering new bug species, or socializing with friends — depending on the needs and wants of the player. Another crucial dynamic feature of *ACNH* is its accurate portrayal of real-world weather, regardless of a player's location in the real world. The game deeply connects players to the virtual environment they are playing in through its clever use of gameplay mechanics and dynamics; however, it also forces players to acknowledge the physical environment beyond their screen. Additionally, the game provides players with a virtual digital network through which they can connect with others. Without it, players would not be allowed to communicate with their friends and admire nearby islands. This dynamic feature creates a sense of community among fans and should be applied to many more role-playing and adventure games.

The aesthetics of *ACNH* have played a much more significant role in the game's success than anyone could have ever imagined. There is something about the game's playful use of color and clever use of animated anthropomorphic characters that keeps players returning for new adventures. This is especially true among children, who continue to use the game to develop a better understanding of cultural heritage and landscape practices. The game also allows for greetings and expressions of feeling (e.g., joy, distress, etc.) to occur at any time. These alternative forms of communication provide players and NPCs, or non-playable characters, with insight into another player's emotional state. Although game developers have applied these

strategies to video game experiences, the same methods can be used in other design fields, including landscape architecture and urban design.

CONSIDERATIONS

Although the mechanics, dynamics, and aesthetics of video game experiences offer an initial glimpse into video game design in the video game industry, the complexity of virtual environment-building for use in landscape architectural practice could be an intense technological feat to overcome. Abandoned space will always be present in rural and urban contexts. However, the technology landscape architects need to do their job must considerably advance in coming years to meet the industry's expectations, which is becoming increasingly digital. If video game designers, landscape architects, and other design professionals are to play an active role in addressing climate change, racial injustice, effects of colonialism, and several other social, economic, and ecological issues in the built environment, they must be willing to explore the virtual realm, emerging virtual media types, and their potential uses in future projects.

A comparative analysis of the mechanics, dynamics, and aesthetics of three popular video games — *The Witness*, *Common'hood*, and *Animal Crossing: New Horizons* — revealed how video game designers create virtual environments. As it turns out, they think deeply about their players' user experience and how it can be manipulated to present opportunities for adventure, mischief, or even critical thinking to occur. Landscape architects engage in a similar process but could further integrate video game methodologies and frameworks into their projects. For example, the MDA framework could be of particular interest to landscape architects and urban

designers because of its emphasis on the rules (mechanics), behaviors (dynamics), and emotional situations (aesthetics) that could influence the overall social experience.

08_Conclusion

RESULTS

Upon conducting a literature review of relevant journal articles and books about landscape architecture, post-industrial space, video game design, and many other topics, it has become evident that the field of landscape architecture is entering yet another period of digital exploration and growth. “While in previous decades visual representation techniques were only very sporadically utilized, they have now become a standard in landscape research and practice.”[62] Today, there are very few landscape architecture firms that do not utilize digital tools and platforms somehow. Moving forward, this is not likely to change within the industry, given the time and money that most firms have put into learning an extensive list of applications to aid in their design processes.

Furthermore, upon conducting a comparative analysis of the mechanics, dynamics, and aesthetics of *The Witness*, *Common’hood*, and *Animal Crossing: New Horizons*, it became clear that the tools and software landscape architects use to make critical design decisions could more appropriately integrate the public into the process. AutoCAD, Sketch-Up, Rhinoceros 3D, and other commonly-used software applications do not allow community engagement to occur in a meaningful way. To find a solution to this issue, many design professionals have begun working with emerging virtual media types, like VR. Perhaps the integration of both emerging and existing technological platforms — like VR and video games, for example — into the built environment could present new ways for designers to interact with the public and receive critical feedback along the way.

[62] Eckart Lange, “99 Volumes Later: We Can Visualise. Now What?” In *Landscape and Urban Planning,* 528.

DISCUSSION

It is no secret that design professionals must take on additional roles to complete their projects. For example, on any given day, an architect, landscape architect, or interior designer might also take on a graphic designer's role by creating pleasing graphics to aid in their design conversations with clients. On another day, designers might take on a horticulturist's role as they decide which understory and overstory trees will be added to a project and how they will be planted on-site. Although picking up additional jobs can significantly improve the design process's efficiency, landscape architects and other design professionals must rely more on others' expertise. Establishing transdisciplinary partnerships — in which design professionals can share knowledge with partners even beyond the design disciplines — is vital for future designers. Mark Linder — a Professor of Architecture at the Humanities Center at Syracuse University — is a transdisciplinary practice supporter. He reminds us that:

> The object of transdisciplinary work is not to enforce or clarify differences, identities, or limits, but to demonstrate the flexibility of disciplinary identities and to explain how negotiations between disciplines produce reconfigured modes of practice. Because it continues to use properly disciplinary techniques, concepts and vocabularies and, at the same time, is open to the alterations that emerge when they make undisciplined appearances or appear in altered forms in other disciplines, transdisciplinary architectural work, whether by architects or others, will both intensify and expand the discipline.[63]

If they are to find creative solutions to the urban and rural environment's most significant issues, landscape architects, architects, and interior designers must partner with other professionals. Not only will this give design professionals a chance to learn from the expertise of others, but it will also give them a chance to continue to build upon and improve emerging

[63] Mark Linder and Penelope Dean, "TRANSdisciplinarity," Essay, In *Hunch 9: Disciplines*, 15.

technologies in their fields of design. As this occurs, designers might become better equipped to tackle issues of abandonment in the built environment. After all, emerging media types, like VR, could significantly enhance community engagement and assist in the design process that designers often undergo. Providing citizens with access to essential resources is necessary for any design process; however, how can these resources be appropriately provided to community members who need them if designers do not adequately involve them in their design processes? As the field of landscape architecture continues to develop, it will be important to consider how digital and technological advancement will affect the future of the industry.

LIMITATIONS

Of course, there are a number of neglected or unresolved research areas that need further exploration within this study. For example, the comparative analysis for this study covered only three video games. A more extensive list of video games could have revealed even more techniques for landscape architects to adopt from their transdisciplinary partners. Furthermore, the comparative analysis of a wider range of video game types might further expand the knowledge and expertise design professionals could obtain from others.

Although *The Witness* can be played on a variety of gaming platforms — including Windows, Playstation 4, Xbox One, macOS, and iOS — *Common'hood*, and *Animal Crossing: New Horizons* can only be played on certain systems. Perhaps a wider range of video game platforms could have been analyzed in the process. For example, Xbox and Playstation are prominent video game consoles that millions of people plug into everyday. Mobile devices are yet another platform that gamers use frequently. If landscape architects and urban designers are

to adopt game methodologies from game developers, then they must look further into the systems that they can connect to others through.

The video gaming industry - perhaps more than any other platform - has embraced users of all backgrounds, regardless of sexuality, gender, or ethnicity, for many years. However, cities and rural areas alike must further integrate video games in creative ways to better supplement education around important topics like racism, homophobia, and social activism in both the past and present. Unfortunately, the information we receive through our digital platforms of social interaction is not always true, accurate, objective or impartial, which sets up another research question for designers to ponder: how might unbiased educational intervention occur through gameful design in our current era of disinformation?

FINAL REMARKS

As the global video gaming industry has silently taken over the entertainment world, artists, architects, and game designers alike have been investigating the role of technology in our increasingly digital world, as well as the ethical and moral dilemmas that have emerged as the industry has risen in popularity. Gone are the days when gaming was just an activity to pass the time; gaming has instead become a booming industry with ample room for growth. In fact, game theory, mechanics, and methodologies have the potential to be used extensively in other realms and disciplines of design, including landscape architecture, to better understand how users interact with and react to elements of game design that promote learning. In the near future, the field of landscape architecture is likely to undergo a significant digital change, and it is important that they remain focused on embracing the digital change as they begin this new adventure.

09_Bibliography

"AIA Code of Ethics and Professional Conduct." The American Institute of Architects. Accessed March 5, 2021. https://www.aia.org/pages/3296-code-of-ethics-and-professional-conduct.

Burbach, Chris. "Coronavirus Halts Most Court Activity, but Evictions Still Pack Nebraska Courtrooms." Omaha World Herald, November 25, 2020. https://omaha.com/news/state-and-regional/coronavirus-halts-most-court-activity-but-evictions-still-pack-nebraska-courtrooms/article_b2793264-d90d-542d-a010-6f7f42b19f9c.html.

Clutter, McLain. "Notes on Ruin Porn." The Avery Review, 2016. http://www.averyreview.com/issues/18/notes-on-ruin-porn.

Desimini, Jill. "From Planned Shrinkage to Formerly Urban: Staking Landscape Architecture's Claim in the Shrinking City Debate." *Landscape Journal* 33, no. 1 (2014): 17–35. https://doi.org/10.3368/lj.33.1.17.

Desimini, Jill. "Limitations of the Temporary: Landscape and Abandonment." *Journal of Urban History* 41, no. 2 (2015): 279–93. https://doi.org/10.1177/0096144214563502.

Dormans, J. "Game Design Theory." In *Engineering Emergence: Applied Theory for Game Design*, 43–65. Mountain View, CA: Creative Commons, 2012.

"Explore Data," United States Census Bureau. Accessed January 15, 2021. https://www.census.gov/.

Fletcher Studios, and Thekla. "The Witness: Designing Video Game Environments." Web log. *Fletcher Studio* (blog), May 26, 2017. https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.

Fraser, Emma. "Unbecoming Place: Urban Imaginaries in Transition in Detroit." *Cultural Geographies* 25, no. 3 (2018): 441–58. https://doi.org/10.1177/1474474017748508.

Gandy, Matthew. "Marginalia: Aesthetics, Ecology, and Urban Wastelands." *Annals of the Association of American Geographers* 103, no. 6 (2013): 1301–16. https://doi.org/10.1080/00045608.2013.832105.

Geist, Jenny. "Oregon Trail on Apple Arcade Has Better Representation for Native American Stories." Game Rant, April 4, 2021. https://gamerant.com/oregon-trail-apple-arcade-native-american-representation/.

George, Benjamin H., and Peter Summerlin. “GET WITH THE PROGRAM.” Landscape Architecture Magazine, December 2, 2019. https://landscapearchitecturemagazine.org/2019/11/05/get-with-the-program/.

Gilbert, Ben. “Nintendo's Switch Remains Sold Out Everywhere as the Pandemic Stretches On - and There's No End in Sight.” Business Insider. Business Insider, July 30, 2020. https://www.businessinsider.com/nintendo-switch-still-sold-out-in-mid-summer-2020-7.

Hehl-Lange, Sigrid, and Eckart Lange. “Chapter 10: Virtual Environments.” Essay. In *Research in Landscape Architecture: Methods and Methodology*, 161–76. London: Routledge, 2017.

“Ian McHarg.” URISA. Accessed January 15, 2021. https://www.urisa.org/awards/ian-mcharg/.

Jenkins, Henry. “Game Design as Narrative Architecture.” *Computer* 44, no. 3 (2004): 118-130.

Johnson, David W., and Roger T. Johnson. “An Educational Psychology Success Story: Social Interdependence Theory and Cooperative Learning.” *Educational Researcher* 38, no. 5 (2009): 365–79. https://doi.org/10.3102/0013189X09339057.

Khan, Imad. “Why Animal Crossing Is the Game for the Coronavirus Moment.” The New York Times. The New York Times, April 7, 2020. https://www.nytimes.com/2020/04/07/arts/animal-crossing-covid-coronavirus-popularity-millennials.html.

Konczal, Lea. “Report: St. Louis Is America's Fastest-Shrinking City.” St. Louis Business Journal, August 28, 2020. https://www.ksdk.com/article/news/local/business-journal/united-states-fastest-shrinking-cities/63-75f49d0f-b6c0-4f53-99e1-f06f82e90f84.

Lange, Eckart. “99 Volumes Later: We Can Visualise. Now What?” *Landscape and Urban Planning, 100 (4), Pp. 403-406* 31 (2005): 527–40.

Linder, Mark, and Penelope Dean. “TRANSdisciplinarity.” Essay. In *Hunch 9: Disciplines*, 12–15. Rotterdam: Berlage Institute, 2005.

McCowan, Tristan. “Reframing the Universal Right to Education.” *Comparative Education* 46, no. 4 (2010): 509–25. https://doi.org/10.1080/03050068.2010.519482.

Noble, Breana. “Grand Plan to Redevelop Packard Plant Is Scrapped; Eyesore Goes Back on Market.” The Detroit News. The Detroit News, October 30, 2020. https://www.detroitnews.com/story/business/2020/10/29/grand-plan-redevelop-packard-plant-ruins-in-detroit-scrapped/6076466002/.

Portman, M. E., A. Natapov, and D. Fisher-Gewirtzman. “To Go Where No Man Has Gone before: Virtual Reality in Architecture, Landscape Architecture and Environmental Planning.” *Computers, Environment and Urban Systems* 54 (2015): 376–84. https://doi.org/10.1016/j.compenvurbsys.2015.05.001.

Safransky, Sara. “Greening the Urban Frontier: Race, Property, and Resettlement in Detroit.” *Geoforum* 56 (2014): 237–48. https://doi.org/10.1016/j.geoforum.2014.06.003.

Sanchez, Jose. *Architecture for the Commons: Participatory Systems in the Age of Platforms*. London ; New York: Routledge, Taylor et Francis Group, 2021.

Sanchez, Jose. “Common'hood.” Plethora Project. Accessed January 15, 2021. https://www.plethora-project.com/commonhood.

Thuning, Fredrik. “Landscape Architecture in Video Games: a Design Experiment of a Virtual Landscape.” Thesis, Swedish University of Agricultural Sciences, Department of Landscape Architecture, Planning and Management, 2018, 1-80.

Torrente, Javier, Ángel Del Blanco, Pablo Moreno-Ger, Iván Martínez-Ortiz, and Baltasar Fernández-Manjón. “Implementing Accessibility in Educational Videogames with <e-Adventure>.” *1st ACM International Workshop on Multimedia Technologies for Distance Learning*, 2009, 57–66. https://doi.org/10.1145/1631111.1631122.

Voegeli, William. “The Truth About White Flight.” City Journal, August 20, 2020. https://www.city-journal.org/truth-about-white-flight-from-cities.

Images

Dormans, J. *A finite state machine representing an adventure game*. 2012, Digital image, In *Engineering Emergence: Applied Theory for Game Design*. Accessed July 20, 2020, https://pure.uva.nl/ws/files/1167833/102090_08.pdf.

Dormans, J. *A more complex finite state machine, but one that still produces a finite set of trajectories*. 2012. Digital image, In *Engineering Emergence: Applied Theory for Game Design*. Accessed July 20, 2020, https://pure.uva.nl/ws/files/1167833/102090_08.pdf.

George, Benjamin H. *Landscape architects are rapidly adopting emerging technologies*. 2019. Digital image. Landscape Architecture Magazine, Accessed January 10, 2021, https://landscapearchitecturemagazine.org/2019/11/05/get-with-the-program/.

Hunicke, R., LeBlanc, M., & Zubek, R. *The MDA Framework*. Digital Image. 2012. In *Proceedings of the AAAI-04 Workshop on Challenges*. Accessed July 10, 2020, https://pure.uva.nl/ws/files/1167833/102090_08.pdf.

Nintendo. *In millions of tweets about the game, people praise its ability to provide comfort and social connections*. April 7, 2020. Digital image. The New York Times. Accessed February 10, 2021, https://www.nytimes.com/2020/04/07/arts/animal-crossing-covid-coronavirus-popularity-millennials.html.

Nintendo. *Tom Nook stands at the center of Animal Crossing*. April 19, 2020. Digital image. PaperCity Magazine. Accessed February 26, 2021, https://www.papercitymag.com/culture/animal-crossing-playing-wrong-tom-nook-evil-consipracy-theories/.

Olitan, Julius. *Fastest Shrinking Large Cities in the United States*. August 20, 2020. Digital image. AdvisorSmith, Accessed June 15, 2020, https://advisorsmith.com/data/fastest-growing-and-shrinking-large-cities-in-america/.

Sanchez, J. *Common'hood 1*. 2021. Digital image. Plethora Project. Accessed February 21, 2021, https://www.common-hood.com.

Sanchez, J. *Common'hood 2*. 2021. Digital image. Plethora Project. Accessed February 21, 2021, https://www.common-hood.com.

The Packard Plant Today (exterior view). February 26, 2018. Digital image. Packard Plant Project, Accessed June 4, 2020, http://packardplantproject.com/history/index.html.

The Packard Plant Today (interior view). February 26, 2018. Digital image. Packard Plant Project, Accessed June 4, 2020, http://packardplantproject.com/history/index.html.

Thekla. *Geology*. May 26, 2017. Digital Image. Fletcher Studio. Accessed February 15, 2021, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.

Thekla. *Map of Island zones*. May 26, 2017. Digital image. Fletcher Studio. Accessed February 15, 2021, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.

Thekla. *Puzzle group tied to environmental cues*. May 26, 2017. Digital image. Fletcher Studio. Accessed February 15, 2021, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.

Thekla. *The Witness Island at the time of game publishing*. May 26, 2017. Digital image. Fletcher Studio. Accessed February 15, 2021, https://www.fletcher.studio/blog/2017/5/26/the-witness-designing-video-game-environments.